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BOAT DOCKING STABILIZER

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by

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BACKGROUND

5 This application is a non-provisional application filed under 35 U.S.C. §111(a)) claiming
6 priority of the provisional application serial number 60/394,729 filed July 10, 2002. Reference is
7 hereby made to Disclosure Document No. 504145. All subject matter set forth in Provisional
8 application serial number 60/394,729 and document disclosure reference 504145 are incorporated
9 by reference into the present application.

10 This invention relates generally to a boat docking stabilizer which may be used in pairs for
11 mooring a boat to a dock structure or the like. This invention relates specifically to an economic,
12 compact and reliable boat mooring apparatus that stabilizes a moored boat for safe boarding and de-
13 boarding of passengers while permitting the boat to roll free with the waves thus preventing damage
14 to either the dock or the moored boat.

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SUMMARY

16 The present invention is directed to an improved, economic, compact and reliable boat
17 docking stabilizer device for mooring a boat to a dock structure that stabilizes a moored boat
18 allowing for safe boarding and de-boarding of passengers from the moored boat, comprising an
19 adjustable backboard mounted perpendicularly to a dock structure by fastening means, an adjustable
20 vertical support bracket mounted to the backboard, a hitch ball coupler pivotably mounted to the
21 vertical support bracket for receiving a ball hitch mounted on a boat, and means for locking the hitch
22 ball coupler in a ready position and in a locked position. The boat docking stabilizer device wherein
23 the hitch ball coupler has a handle mounted linearly to the hitch ball coupler as means for ease of use
24 of the device. The backboard of the boat docking stabilizer device has a parallel row of apertures
25 formed therein as adjustment means for the positioning of the backboard relative to the dock. The
26 vertical support bracket of the boat docking stabilizer has a parallel row of apertures formed therein
27 as adjustment means for the positioning of the vertical support bracket upon backboard. The hitch

1 ball coupler may be adjusted vertically by moving pivot pin to different apertures in the vertical
2 support bracket. The hitch ball coupler may be positioned in a ready position and in a locked
3 position by moving a locking pin, received by a tube carried by the hitch ball coupler, into a different
4 pair of apertures in the vertical support bracket such that the hitch ball coupler remains in a desired
5 position.

6 An improved boat docking stabilizer device for mooring a boat to a dock structure that
7 stabilizes a moored boat allowing for safe boarding and de-boarding of passengers from the moored
8 boat, comprising a pair of such devices positioned apart from each other on a dock such that a boat
9 may be moored between the pair of the devices. An improved boat docking stabilizer device such
10 that the moored boat rides on the water without damage to either the boat or the dock permitting the
11 boat to be left moored for a lengthy period of time. An improved boat docking stabilizer device
12 such that the device could be mounted for use on a larger boat to moor a smaller boat thereto.

For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter in which a preferred embodiment of the invention is illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

Understanding of the invention will be enhanced by referring to the accompanying drawings, in which like numbers refer to like parts in the several views and in which:

Fig. 1 is a perspective view of a boat docking stabilizer device of the present invention.

Fig. 2 is a perspective view of the hitch ball coupler portion of the device of the present invention with the locking pin and pivoting pins removed from the device:

Fig. 3 is an exploded view of the backboard and vertical support bracket portion of the present invention;

Fig. 4 is a side elevation of the device in its stored position with the boat and dock shown in phantom;

Fig. 5 is a side elevation view with the device in its ready position and the boat mounted hitch

1 ball shown in phantom and the dock shown in phantom;

2 **Fig. 6** is a side elevation view with the device shown in its position of use but not locked with
3 the hitch ball, boat and dock shown in phantom;

4 **Fig. 7** is a side elevation view with the device shown in its position of use and locked with the
5 hitch ball, boat and dock shown in phantom;

6 **Fig. 8** is a sectional detail, indicated in **Fig. 2**, of the pivot tube welded into the hitch ball
7 coupler; and

8 **Fig. 9** is a sectional detail, indicated in **Fig. 2**, of the locking tube welded into the hitch ball
9 coupler.

10 **DETAILED DESCRIPTION OF THE CURRENTLY PREFERRED EMBODIMENTS**

11 Understanding of the invention will be further enhanced by referring to the following
12 illustrative but non-limiting example.

13 Turning now to the drawings, in which like reference characters refer to corresponding
14 elements throughout the several views, **Fig. 1** illustrates the assembled boat docking stabilizer **10** of
15 the present invention with a backboard **20** shown mounted by a channel bracket **21** to a dock **22**,
16 shown in phantom. Backboard **20** has two rows of apertures **24** formed in parallel rows therein, the
17 apertures **24** formed adjacent the perimeter edge of the backboard **20**. The apertures **24** permit the
18 backboard **20** to be mounted in a generally vertical position by nuts and bolts or other fasteners to
19 the dock **22**. In actual use conditions, backboard is of wooden material, such as oak, although other
20 resilient yet machinable materials could be used. A second set of bores **26** are formed in parallel rows
21 in a central portion of the backboard **20**. These bores **26** permit the vertical support bracket **30** to
22 be mounted by nuts and bolts, screws or other fastening means to the backboard **20**. Apertures **32**
23 are formed in parallel rows in the vertical support bracket **30** both to permit the bracket **30** to be
24 mounted to the backboard **20** by screws or other fasteners and to provide a receiver for pivot pin **62**
25 which forms the attachment means for hitch ball coupler **50** to be attached to vertical support bracket
26 **30**. The backboard **20** is positioned by fastening means, such as nuts and bolts, screws or other
27 fastening means, to a dock **22** or other structure to which the boat is desired to be moored. Channel
28 bracket **21** is provided in actual use conditions as additional fastening means such that a portion of

1 the dock 22 is sandwiched between channel bracket 21 and backboard 20 to provide stability to
2 attachment of the device to the dock 22 although vertical support bracket 30 could be mounted
3 directly to the dock 22. Use of backboard 20 provides additional adjustment means to
4 accommodate varying water levels. A series of apertures 24 are formed adjacent the perimeter edge
5 28 of backboard 20 to permit adjustment of backboard 20 depending on the water level such that
6 the device 10 may be used to moor a boat at varying water levels. The backboard 20 may be
7 adjusted vertically by moving fastening means to different pairs of apertures 24. Additionally, when
8 water levels have changed a small amount, vertical support bracket 30 which fastens to backboard
9 20 by fastening means through holes 32, may be adjusted vertically by moving fastening means to
10 different pairs of holes 32 which line up with bores 26 formed in backboard 20. Vertical adjustment
11 of both backboard 20 and vertical support bracket 30 permit a wide variety of water levels to be
12 easily adjusted for.

13 Vertical support bracket 30 has a pair of sides formed therein, a flange 31 and a side wall 29,
14 each of which has having orifices 34 formed therein for the receipt of pivoting pin 62. Additionally,
15 side wall 29 has a second row of orifices 34 for receipt of locking pin 70. A support having set of
16 openings with a chamfer to assist placement of the locking pin 70 is mounted 42, in actual use
17 conditions mounted by welds, although other mounting means could be used, to vertical support
18 bracket side wall 29 such that openings align with orifices 34. Support 42 permits locking pin 70,
19 when in its position of use received by the body of hitch ball coupler 50, to position hitch ball coupler
20 50 either in a locked position, as shown in Figs. 1 & 7 or in a ready position as shown in Fig. 5.
21 Cotter pins 72 may be used to lock pivoting pin 62 and locking pin 70 in place, as shown in Fig. 1.
22 Under use conditions, both cotter pins 72, locking pin 70 and pivoting pin 62 may be tethered to the
23 device by cable, wire or the like to prevent these items from being lost in the water when adjusting
24 their positions. Hitch ball coupler 50 has a safety lever 52 and trigger lock 54. Hitch ball coupler 50
25 while shown in standard form, can be adapted such that the hitch ball coupler body 48 is elongated
26 for use with larger boats such as pontoon boats. Handle 56 is attached, in actual use conditions,
27 along the side of hitch ball coupler body 48 although handle 56 could be attached elsewhere on hitch
28 ball coupler 50 such as on the dorsal side thereof without departing from the scope and intent of this
29 invention. Handle 56 is equipped with a grip 58 for ease of use of the boat docking stabilizer 10.

1 Glide bar 44 is provided and screw mounted to shelf 46 formed along the edge of vertical support
2 bracket 30 opposite that of flange 31. Glide bar 44 is provided as a bumper to cushion the boat being
3 moored to boat docking stabilizer 10. Chamfered locking pin support 42 that is welded to side wall
4 29 of vertical support bracket 30, chamfered locking pin support 42 provided to support locking pin
5 70 into position to either lock hitch ball coupler 50 into a ready position or a locked position, the
6 chamfer provided to guide locking pin 70 into position. Chamfered locking pin support 42 is of
7 stainless steel or other resilient material . Chamfered locking pin support 42 is shaped as a bar of
8 material with chamfered openings that align with side wall orifices 34 permit ease of use of locking
9 pin 70 which may be positioned through hitch ball coupler 50 and held in position, either the ready
10 position, as shown in **Fig. 4** or the locked position as shown in **Fig. 7**. A pair of channel brackets 31,
11 **Fig. 3** are used to firmly hold the boat docking stabilizer 10 in position on dock 22. Vertical support
12 bracket 30 is of zinc plated steel although other resilient materials could be used, and has a crenelated
13 profile. Vertical support bracket 30 is screw mounted to backboard 20 by screws 74 although other
14 fastening means could be used. Bolts 76 are used to mount backboard 20 to dock 22 although again
15 other fastening means could be used. Channel bracket 21 is positioned inside dock 22 to more firmly
16 attach boat docking stabilizer 10 to dock 22. T nuts 78 are shown as liners for apertures 24 formed
17 in backboard 20 although other reinforcing materials could be used.

18 **Fig. 4** is a side perspective view with some elements shown in cross-section to aid in
19 understanding of the invention. Backboard 20 is bolt-mounted to dock 22 and vertical support
20 bracket 30 is screw mounted to backboard 20. Backboard 20 is shown mounted mid-backboard to
21 the dock22 although it is understood that backboard 20 may be easily adjusted to accommodate lower
22 or higher water levels. Vertical mounting bracket 30 also is adjustable compounding the adjustability
23 of boat docking stabilizer 10 in regards to water levels. In **Fig. 4**, hitch ball coupler 50 is shown
24 raised in a ready position pivoted about pivot pin 62 to permit the user to pull the boat in under the
25 hitch ball coupler 50, and, as shown in **Fig. 5**, manually release locking pin 70 to lower hitch ball
26 coupler 50 pivoted about pivot pin 62 into position fastening onto hitch ball 100, **Fig. 6**. Hitch ball
27 coupler 50 is locked into position in **Fig. 7** with safety hitch lever 52 shown in a locked position and
28 locking pin 70 in a locked position.

29 **Fig. 8** is the pivot pin tube 64 indicated by cross-section at **Fig. 2**. Pivot pin tube 64 is

1 mounted, by welds in actual use conditions, although other fastening means could be used, are to the
2 underside of hitch ball coupler 50 and forms a chamber into which pivot pin 62 is received and about
3 which hitch ball coupler 50 pivots. A chamfer 66 guides pivot pin 62 into pivot pin tube 64.

4 Fig 9 illustrates a similar locking pin tube 68 that receives locking pin 70, indicated by cross-
5 section at Fig. 2. A chamfer 66 in both locking pin support 42 and locking pin tube 68 guides
6 locking pin into locking pin tube 68.

7 In use, the backboard 20, which has been positioned by fastening means, such as nuts and
8 bolts, screws or other fastening means, to a dock 22 or other structure to which the boat is desired
9 to be moored, has mounted thereto in actual use conditions on a distal side thereof channel bracket
10 21 is used although backboard 20 could be mounted directly to the dock 22. Backboard 20 is
11 vertically adjusted to accommodate the water level such that the hitch ball coupler 50 would be
12 grasped by the grip 58 on handle 56 would meet and attach hitch ball 100 mounted on a boat. Fig.
13 4 illustrates the device 10 mounted on the backboard 20 and positioned in a storage position with the
14 hitch ball coupler 50 hanging vertically from pivot pin 62. When the boat approaches, user manually
15 lifts the device 10 by means of handle 56, as shown in Fig. 5, such that hitch ball 100 is received by
16 hitch ball coupler 50, Fig. 6, and locked into place, Fig. 7. Using a pair of the devices 10, positioned
17 on the dock or other mooring structure in a spaced apart position, in actual use conditions about six
18 feet apart, provides a stable surface for boarding and de-boarding from dock to boat or between a
19 larger boat and smaller boat.

20 Fig. 2 illustrates the hitch ball coupler 50 in detail with both locking pin 70 and pivoting pin
21 62 removed. An off the shelf hitch ball coupler 50, such as manufactured by DL Corp. of Hastings
22 NE can be used. The hitch ball coupler body 48 is lengthened as an adaptation to allow use of the
23 device of this invention with larger boats, such as pontoons. Additionally, the addition of handle 56
24 is an adaptation. Handle is shown fastened to a side of hitch ball coupler body 48 by screws or other
25 fastening means.

26 Although the present invention has been described in considerable detail with reference to
27 certain preferred versions thereof, other versions are possible. For example hitch ball coupler 50
28 couple be adapted in length to accommodate a larger boat such as a pontoon boat. Therefore, the
29 spirit and scope of the appended claims should not be limited to the description of the preferred

1 versions contained herein.

2 Changes and modifications in the specifically described embodiments can be carried out
3 without departing from the scope of the invention which is intended to be limited only by the scope
4 of the appended claims.